

EXHIBIT F

Search

JoinLog In

Repair Guides

Answers Forum

Parts & Tools Store

Teardowns

Translate

← iPhone 7 Plus

Edit

Full Screen

Options

TEARDOWN


iPhone 7 Plus Teardown

Published: September 15, 2016

Comments: 296 Favorites: 42 Views: 544.5k


Tools Featured in this Teardown

Buy these tools




64 Bit Driver Kit
\$34.95

Buy



iSlack
\$24.95

Buy



P2 Pentalobe Screwdriver iPhone
\$7.95

Buy

Phillips #00 Screwdriver
\$5.95

Buy

iFixit Opening Picks set of 6
\$4.95

Buy

Spudger
\$2.95

Buy

Video Overview



Introduction

Since Apple's announcement day, we've been anxiously awaiting the chance to delve into their latest and greatest tech. Today, we're kicking off our teardown trifecta with the iDevice that boasts both the greatest surface area and the highest number of cameras: the iPhone 7 Plus.

Looking for even more teardown action? Check out our [Apple Watch Series 2 teardown](#) for the first look at the cutting edge of wearable tech.

Our teardown trio is just getting started. Follow along on [Facebook](#), [Instagram](#), or [Twitter](#) for the latest news from the repair world.

This teardown is **not** a repair guide. To repair your iPhone 7 Plus, use our [service manual](#).

Step 1 iPhone 7 Plus Teardown

- There's a lot to learn about what's hidden inside the "best, most advanced iPhone ever"—but first, let's take a moment to review what we already know:
- Apple A10 Fusion processor with embedded M10 motion coprocessor
- 32, 128, and 256 GB onboard storage capacity (jet black model not available in 32 GB)
- 5.5-inch multitouch IPS Retina HD display with 1920 × 1080 pixels (401 ppi)

- Dual 12 MP wide-angle and telephoto cameras with *f*/1.8 and *f*/2.8 apertures (respectively), 2x optical zoom, and 10x digital zoom
- 7 MP FaceTime HD camera with *f*/2.2 aperture and 1080p HD recording capability
- Solid-state Home button with Touch ID, driven by new Taptic Engine
- 802.11a/b/g/n/ac Wi-Fi + MIMO Bluetooth 4.2 + NFC

□ 3 comments

Step 2

-
- The dimensions of the iPhone 7 Plus are identical to those of its predecessor, at 158.2 mm × 77.9 mm × 7.3 mm—and yet it's slightly lighter, at 6.63 oz (vs. the 6s Plus at 6.77 oz). Hopefully Apple didn't remove anything important.
 - The 7 Plus is also stamped with a new model number: A1785.
 - For those more inclined to the dark side, Apple is now offering matte black and [scratchable](#) jet black versions of the iPhone 7 Plus, in addition to the already available silver, gold, and rose gold colors.
 - The 7 Plus also drops some of those [unsightly antenna lines](#) of old, in favor of a more subtle appearance.
 - Perhaps the most noticeable difference is the [Lightning to 3.5 mm headphone jack adapter](#) included in the box. It's going to take some [courage](#) for us to move on from the headphone jack. Sorry baby adapter. It's not you, it's us.

□ 12 comments

Step 3

-
- Before we dig into this three-eyed monster, we indulge ourselves with a sneak peek thanks to our friends at [Creative Electron](#).
 - Stay tuned for more views of the new iPhone's internals courtesy of our X-ray X-perts!

- What advantage does the superpower of X-ray vision grant?
- For starters, we can see that the headphone jack got kicked out to make space for more Taptic Engine.
- Closer inspection shows a new, second lower speaker grille that leads... nowhere? Interesting.
- We can also see the new third eye in the camera array of the iPhone 7 Plus. What wisdom and vision does it hold? Let's find out!

□ [8 comments](#)

Step 4



TOOLS USED ON THIS STEP:
iSclack

\$24.95

- Apple may have gotten rid of the headphone jack, but clearly stays loyal to the Pentalobe. Two now-familiar screws guard each side of the Lightning connector.
- Eager to see past the rose gold exterior, we perform some forceful [iSclack](#)-ing and a *great deal* of prying to get past the intense adhesive.
- The adhesive strip sealing the 7 Plus is considerably stronger than the strip we found in [its predecessor](#). Could this be our first sign of waterproofing?

□ [5 comments](#)

Step 5

- What is this madness? The 7 Plus bizarrely opens to the side, despite the familiar clips at the top of the phone that help align the display as in previous models.
- We got lucky and didn't rip the display cables along the middle-right side. Thankfully, the top cable has some slack.
- Subtle design changes like this are where repair guides come in handy.
- Opening the 7 Plus reveals lots of black and white gooey adhesives running along the perimeter of the phone.

- Our bet is that this penguin-themed stickiness is part of Apple's efforts to add water resistance. Then again, Apple's engineers might just really love glue.

□ 9 comments

Step 6



TOOLS USED ON THIS STEP:

64 Bit Driver Kit

\$34.95

- Inside we find an army of *courageous* tri-point screws guarding the cable bracket that covers the battery connector and two of the display cables.
- A year ago we went out on a limb and added the Apple watch screw to our 64-bit toolkit. Boy, what a good thing we did.
- A second platoon of tri-points secure the bracket for the long and springy upper component display cable.
- Tri-point screws are uncommon. While you could make the argument that tri-point screws are less likely to strip, we assume if it was a choice of mechanical advantage, we'd see them throughout iDevices. It's pretty clear that they are here to simply hinder the two most common user repairs: battery and screen replacements.
- We dispatch our own ~~weaponry~~ screwdriver and force the bracket to surrender so we can continue our mission into the heart of the iPhone 7 Plus.

□ 9 comments

Step 7

- In place of the headphone jack, we find a component that seems to channel sound from outside the phone into the microphone... or from the Taptic Engine out.
- No fancy electronics here, just some well-designed acoustics and molded plastic.
- **Teardown Update:** According to Apple, this plastic component is a barometric vent. With the added ingress protection afforded by the watertight seal, the iPhone uses this baffle to equalize the internal and atmospheric

pressures in order to have an accurate altimeter.

- Mechanical buttons are a thing of the past when you have a Taptic Engine! This sleek engine uses [haptic feedback](#) to simulate the push of a button, without having a real button.
- Anyone familiar with the touchpad in the [Retina MacBook 2015](#) has already experienced haptics from the Taptic Engine.

□ [19 comments](#)

Step 8

0:00

- What do you do when things get shaky? You X-ray everything that moves. And that is exactly what we did with the Taptic Engine.
- "Taptic Engine" sounds like something found on an [intergalactic warship](#). In truth, we really are just working with a tiny [linear actuator](#) and some zig-zag springs that shake a weighted core.
- To be fair, this *is* the largest piece of mechanical machinery that we've seen in a smartphone.
- The Taptic Engine translates the pressure on the new solid state home button into finely controlled vibrations.
- We all love the sensation of clicking a button. The Taptic Engine's precise oscillation is designed to provide many types of tactile feedback, including the sensation of pressing a mechanical button.
- Why not just use a regular button with a haptic addition like the [iPhone 6s](#)? Well, one less button is one less place for water to sneak in.

□ [6 comments](#)

Step 9

- We're glad to see Apple sticking with the [tradition](#) of including pull tabs for the battery adhesive.
- It's time for some battery yoga. We stretch each of the three adhesive pull tabs to release the battery

and our tensions about difficult battery removal.

□ 3 comments

Step 10

- And here's the big bad battery itself!
- The battery is rated at 3.82 V and 2900 mAh, for a total of 11.1 Wh, a slight upgrade over the 10.45 Wh (3.8 V, 2750 mAh) of the [6s Plus](#), and on par with the 11.1 Wh, 2915 mAh cell found in the [6 Plus](#).
- Apple claims battery life will be up to one hour longer than the 6s Plus—that is, 21 hours of 3G talk time, approximately 15 hours of Wi-Fi internet use, or up to 16 days on standby.

□ 7 comments

Step 11

- Apple's got us seeing double as we pull out the camera array with two separate sensors, two lenses, and two little connectors.
- The two 12 MP cameras—one wide-angle with Optical Image Stabilization (OIS), just like in the iPhone 7, the second a telephoto—allow for optical zoom.
- Both cameras also sport a new image sensor that Apple claims is 60% faster and 30% more energy efficient than previous iPhones.
- The upgraded cameras almost make it worth the bigger exterior camera bump—now built into the chassis in another suspected waterproofing/dust-fighting tactic.
- We use our X-ray vision to initiate a staring contest with the camera array. Without blinking, we can see four metal pads around one camera. We're guessing these are the magnets that enable OIS.

□ 28 comments

Step 12

- Before we can dig the logic board out of the rear case, we have to remove portions of the antenna assembly—including the antenna flex cable, which acts as a bridge between antenna pathways.
- With the antenna flex cable removed, we focus our attention on the top left Wi-Fi antenna.

□ [3 comments](#)

Step 13

- Plucking the logic board from the 7 Plus is much easier than with [its predecessor](#). There's no need to flip over the logic board to remove the final connections.
- It may seem like a small victory, but we're still encouraged—even small design changes can make a difference in terms of repairability.
- Peeling up the EMI stickers, we spy what might be some additional heat management.
- Could that be the A10 under there?

□ [One comment](#)

Step 14

- The shields are down! The logic board is clear and ready for inspection. Let's see what this puppy is packing!
 - Apple A10 Fusion APL1W24 SoC + Samsung 3 GB LPDDR4 RAM (as denoted by the markings K3RG4G40MM-YGCH)
 - Qualcomm [MDM9645M](#) LTE Cat. 12 Modem
 - Skyworks 78100-20
 - Avago AFEM-8065 Power Amplifier Module
 - Avago AFEM-8055 Power Amplifier Module
 - Universal Scientific Industrial O1 X4

- Bosch Sensortec [BMP280](#) Barometric Pressure Sensor

□ 20 comments

Step 15

- Round the back now: another field of ICs!
- Toshiba THGBX6T0T8LLFXF 128 GB NAND Flash
- Murata 339S00199 Wi-Fi/Bluetooth Module
- NXP 67V04 NFC Controller
- Dialog 338S00225 Power Management IC
- Qualcomm PMD9645 Power Management IC
- Qualcomm [WTR4905](#) Multimode LTE Transceiver
- Qualcomm [WTR3925](#) RF Transceiver

□ 9 comments

Step 16

- But wait, there are even more ICs on the back!
- Apple/Cirrus Logic 338S00105 Audio Codec
- Cirrus Logic 338S00220 Audio Amplifier(x2)
- Lattice Semiconductor ICE5LP4K
- Skyworks 13702-20 Diversity Receive Module
- Skyworks 13703-21 Diversity Receive Module
- Avago LFI630 183439
- NXP 610A38

□ 3 comments

Step 17

- Just a few last ICs on the back of the logic board:
 - TDK EPCOS D5315
 - Texas Instruments 64W0Y5P
 - Texas Instruments 65730A0P Power Management IC
- And as always, thanks to our silicon experts at Chipworks for helping identify the key ICs at play! Head over to [their teardown page](#) for an in-depth analysis of the iPhone 7 control hardware.

□ Add a comment

Step 18

- Raising the ~~roof~~ loudspeaker out of the phone, we find some nice spring contacts and some mesh with ingress-protection!
- Sharing design similarities with the speakers in the [6 Plus](#) and [6S Plus](#), the speaker in the 7 Plus also bears a familiar antenna appendage.

□ [One comment](#)

Step 19

- Tiny ribbon cables attach the Lightning connector assembly to the microphones, which are firmly adhered to the speaker grilles.
- As predicted, the speaker grilles have ingress protection to keep the internals nice and dry.
- And in case you haven't noticed, this Lightning connector assembly is huge! Like previous generations, it is moderately adhered and readily removed from the rear case.
- This cable assembly also features the most substantial gasketing we've seen on a Lightning connector. While [last year's models used foam adhesive](#) to keep out water and dust, this one features a full-on rubber gasket, capable of holding back a 50 meter column of water.

□ [6 comments](#)

Step 20

- Water resistance has been touted as a big new feature in the iPhone 7 Plus—but what actually makes it water resistant? The evidence is everywhere:
- Figures 1 and 2: a plastic SIM eject plug with a rubber gasket.
- Figure 3: a rubber gasket on the SIM tray.
- Rubber gaskets and plugs aren't new technology, but they are effective at keeping liquids and dust out of your phone. But there's a cost—when you replace a component you'll need to make sure you get the gasket in place and that it creates a good seal, which tends to be an extra, finicky step.

□ Add a comment

Step 21

- Pausing our rear case excavation, we take a moment to examine the display assembly and its respective bits.
- From the front face, it looks identical to the 1920-by-1080 displays we've popped off the iPhones 6 and 6s, but there are some notable changes: This guy supports a wider P3 color gamut than its older siblings, and is 25% brighter.
- We also notice a water damage indicator hanging out on the left edge of the display EMI shield. This gadget may be water *resistant*, but it looks like Apple won't be on the hook when you take your phone for a swim.

□ Add a comment

Step 22

- After we free a few standard Phillips screws, the earpiece speaker practically falls out from under the front-facing camera.

- This new earpiece speaker does double duty—for the first time, it also serves as a loudspeaker, giving the iPhone stereo sound for those times when you need to rock out and you *might* not have any place to plug in your headphones.
- The front-facing camera cable assembly is a little more of a handful. Normally when we're served something this tangled up, it comes with meatballs.
- All told, the upper components number:
 - Front-facing camera
 - Microphone
 - Stereo-enabling speaker
 - Proximity sensor and ambient light sensor

□ Add a comment

Step 23

- More tri-point screws secure the home button and LCD shield plate.
- But luckily, there's no adhesive on the LCD shield plate—and the cables are nicely managed.
- There's not much to see here, so we quickly remove the shield plate and head for home, i.e. the home button.

□ Add a comment

Step 24

- Last to leave the display assembly: the home button.
- It's more like the home *touch sensor* really. No buttons about it.
- Analog Devices [AD7149](#) Capacitance Sensor Controller
- For those of you waiting with bated breath, it appears that the new solid state home button is removable. It won't be a simple procedure, with

tiny tri-points and light adhesive on the cable—but there is no longer a delicate gasket to replace. Overall, it is a step in the right direction.

- A replaceable home button is great news for consumers. The mechanical home button has been a point of failure on past iPhones. While our data shows that the reliability of the home button is better in the 6 and 6s compared to the 5 and 5s, we've still had close to 100,000 people use our [iPhone 6 home button](#) repair procedure.
- Additionally, the move to a non-mechanical button should improve overall reliability and reduce the need for replacement. Not to mention, it looks great under an X-ray.

□ [5 comments](#)

Step 25

-
- We're able to pull out the ring/silent switch, complete with gasket, and the rest of the button cable.
 - However, the volume and power buttons are nestled snugly in the case, defying conventional removal.
 - The design looks somewhat reminiscent of past [Apple patent filings for waterproof buttons](#), and requires some [deft disassembly technique](#).

□ [Add a comment](#)

Step 26

-
- The grand finale! With the iPhone 7 Plus torn to bits, we line up our prizes for inspection.
 - But not for long—we have another cutting edge gadget from Cupertino coming your way soon. Stay tuned for more!
 - Special thanks to our friends at Nikkei for lending us their office space in Tokyo to do what we do best!

□ [One comment](#)

Final Thoughts

Repairability Score

The battery is straightforward to access. Removing it requires specialty screwdrivers and knowledge of the adhesive removal technique, but is not difficult.

The solid state home button eliminates a common point of failure.

Improved water and dust protection greatly reduces the need for repairs associated with environmental damage and accidental spills (but also makes some repairs more difficult).

The display assembly continues to be the first component out, simplifying screen repairs, but the procedure has grown more complicated with improved waterproofing measures.

With the addition of tri-point screws, many iPhone 7 Plus repairs will require up to four different types of drivers.

Repairability 7 out of 10
(10 is easiest to repair)

138 COMMENTS

Add a comment

- ☐ %#@ i was so eagerly waiting for this ! I'm like ifixit hasn't uploaded the first set of teardown and here we go
[yazdanbanaji](#) - September 15

Me too! Love their work.

[Colin Baines](#) - September 15

- ☐ Has anyone tried to remove the home "button" yet? Worried about being able to transfer touch id to replacement screens.....
[meeley](#) - September 15

I think the home button is still transferrable to replacement screen based on the screws right under its plate, it should have a small connector to the LCD assembly itself.

[iTechshark MO](#) - September 15

That it what I am hoping based on the video that came out Wednesday, but then they did not remove it. I own a repair shop, I am sitting on the edge of my seat here ;)

[meeley](#) - September 15

Same thing here lol

[iTechshark MO](#) - September 15

Somebody in China beat ifixit to it and did a full teardown. The home button is transferable.

[Tom Chai](#) - September 15

Tom - Do you have a link?

[meeley](#) - September 15

There appears to be a video posted on YouTube of a teardown that took place on the 13th. The video description says it happened in Vietnam. It was obviously obtained illegally due to the obfuscation of the serial and IMEI info on the back of the phone. I wont post the link here but you can search "iPhone 7 Plus Teardown/Disassembly".

[SGB74](#) - September 15

<http://mobile.163.com/photoview/52KG0011...>

[Tom Chai](#) - September 16

Re Home "button" replacement. I was under the impression a new "button" still needs to be calibrated to recognize all previous finger prints. I am not completely positive this is still the case. (?)

[jchagman](#) - September 16

- ☐ Are you going to teardown model A1784 to see if it does indeed have an Intel modem?

[andrewdavidharvey](#) - September 15

It's all about the modem here. Big thing is for me: if Qualcomm, what model, X12? How many antennas, 4x4?

[Nick Roosevelt](#) - September 15

There you go

<http://www.chipworks.com/about-chipworks...>

[Anas](#) - September 17

Yes, its Qualcomm LTE Cat 12 modem which is capable of 650Mbps downlink speed. But stupid Apple folks have restricted it to 450 Mbps to match with inferior Intel modem on some models. Intel is Cat 10 modem capable of max 450Mbps

[shreyassv123](#) - September 20

- ☐ I'd be interested to know if iPhone 7 not sold in Japan contains "FeliCa Type-F NFC contactless technology,"

<http://www.apple.com/newsroom/2016/09/ap...>

[msulistio](#) - September 15

I second this! Look forward to maybe hearing from you guys.

[Sam Lewis](#) - September 16

The same NXP 67V04 chip is installed also in the AT&T model.

<http://www.chipworks.com/about-chipworks...>

[koyama](#) - September 16

what is the difference of this iPhone compared to the one they sell in USA?

[george allo](#) - September 16

- ☐ It appears the Home button is screwed in. The LCD shield looks like it will be fun to remove since the display cable is now in the middle left of it instead of at the top.

[Kevin Stuckey](#) - September 15

I am zooming in trying to find a cable, so far I can't find one coming off the button. I know the folks at iFixit have to take their time and do a complete teardown (and upload and type out info), I just wish they would skip ahead a little ;) - We all know the logic board will come out ;)

[rneeley](#) - September 15

Thats pretty much same layout of LCD/Digitizer in iPad Air located on the lower right side with the addition of another flex for front facing cam on iPhone 7 series.

[iTechshark MO](#) - September 15

The cable might be routed under the LCD back plate and thats what I am hoping, Apple will be insane having the home button built in the LCD assembly, maybe next year but not that year lol

iTechshark MO - September 15

Ya, It does have a resemblance to the iPad Mini 4 too (oddly enough did two of those this week, of four total I have seen). We should all know very soon hopefully. We all know the fruit company would like to kill all the small repairs shops off and force people to their stores, but then again I am in a fairly large city with no store for 2.5 hours in any direction...

meeley - September 15

- ☐ Will this iPhone have USB 3.0, like the iPad Pro?! Haha.

hyperintel13 - September 15

no, Lightning port on iPhone 7 does not have pins on both sides like iPad Pro 12.9" <https://twitter.com/ingulsrud/status/776...>

joel - September 15

- ☐ The flex cable appears to go off on the right of the Home button and there seems to be an extension cable that connects to it near the rightmost screw. You can see a small bubble in the cable between the LCD shield and Home button shield??.

Kevin Stuckey - September 15

You are right, thats what I was saying a minute ago.

iTechshark MO - September 15

Also I am kinda feeling that the home button/touch ID will be easier to transfer than previous model with no adhesive, it seems its just a plate screwed in the button.

iTechshark MO - September 15

- ☐ Also if you look at the photo closely, there is a flex on the right side of the home button (its on the left side on the 6 /6S series) so I am kinda positive that the home button/touch ID is transferrable based on a close up of the photo with a zoom in the right side of the home button.

iTechshark MO - September 15

I agree with you!

Kevin Stuckey - September 15

OK, I see what your talking about. Their is also a little hump on the right that is probably the connection point. Looking at the screw in the center of the button, maybe it comes out the front like the track-pad on a macbook. That shield should be lots of fun, I am betting the LCD flex is glued over.

meeley - September 15

Yup that sounds right except that the screw is just sitting to hold the button on place and not to adjust its tactile feedback since its not mechanical.

iTechshark MO - September 15

- ☐ "Two separate sensors, two lenses, and two sets of optical image stabilizers." So OIS on both lenses/sensors?

holger - September 15

Yes indeed ! You got the right mate ! Despite people's claims on the telephoto lens not having the Ois it's crystal clear from this teardown that it indeed does have one

yazdanbanaji - September 15

Based on Apple , its just one mechanical OIS and the second one is just software controlled so its just one OIS as far as I can tell.

iTechshark MO - September 15

No I don't think so, the electromagnetic coils of the 56mm unit only move the lens back and forth for focusing. The 28mm unit you can clearly see the coils and the magnets that allow it to move side to side.

garyliao2001 - September 15

You are right, didn't notice the coils at all.

[iTechshark MO](#) - September 15

- ☐ I can confirm that the touch ID/home button is screwed in a plate with 3 screws to pull it off and the button itself is screwed to the middle of the shield with one , cheers guys, its gonna be transferrable :)

[iTechshark MO](#) - September 15

Good! Now I can sleep soundly tonight knowing I still have a job for the next year :)

[Kevin Stuckey](#) - September 15

We all have businesses for another year then Ed :) -- Can not wait to see the pictures, and especially do my own teardown (I am on the east cost of the US, so I have 8-9 hours to wait on Fedex still.)

[rneeley](#) - September 15

Haha you are %#@ right, one more year in repair business lol

[iTechshark MO](#) - September 15

Not like many of us get much Samsung business anymore... Most of my customers faint or hang up when I tell them how much to fix an S7 Edge screen... Looking into the freezing technique, but not eager to spend a could grand on a maybe....

[rneeley](#) - September 15

- ☐ Awesome job ifixit. \$&@".?

[Alber Einstein](#) - September 15

- ☐ You are always so professional

[Dorothy](#) - September 15

- ☐ Great work!! Can't wait to see the speaker on the top !

[Barry Wilson](#) - September 15

- ☐ Please do provide a detailed review of the new NFC chip that features FeliCa technology exclusively for the Japanese model A1784. Thanks!

[AKari Kamigishi](#) - September 15

- ☐ Please also tear down the 3.5mm to lightning cable to determine what type of DAC it uses

[Pasko](#) - September 15

Yes, please do this someone!

[Dan Parsons](#) - September 16

And the earphones ~~ DD

[Henryplusone](#) - September 16

Are we sure this uses a DAC and the lightning port isn't just capable of outputting an analog signal?

[lwells](#) - September 16

Indeed I am also dying to know what the DAC situation is!

[Foo Bar](#) - September 16

I've had one of these adapters since Thursday -- if I had know it was going to take this long, I would have just torn mine down and published the results on my own blog! The reveal of the third amp is a serious indicator Apple has modified its MFi specs, and now allows analogue output from Lightning. That's a HUGE deal.

[Mac 128](#) - September 17

Yes also very keen to find this info out. Chop-chop ifixit (literally)!

[shrike8](#) - September 17

-
- ☐ I'd like to see the SIM tray portion that this mechanism is how to achieve water resistance IPx7.

[ao11oaray](#) - September 15

-
- ☐ Nice teardown!
How about gyro?
STM or Invensense?

[john smith](#) - September 15

I am guessing the rectangular chip besides those front-end modules in step 14 is the gyro/accelometer. It becomes such a weird shape because Apple wants both a low-energy 3-axis and an accurate 6-axis in one module. If my theory is right, the marker on that chip hints STM.

[Jie Zou](#) - September 16

It is the latest INVN chip

[Someone who knows](#) - September 16

Hey someone who knows why are you so sure? In the 6 there were two separate gyros, a Bosch 3-axis and an Invensense 6-axis:

<http://www.chipworks.com/about-chipworks...> Is this a new part (combo 3 and 6-axis)?

[John](#) - September 16

It is 6-axis Invensense and yes, I am very sure for reasons not related to this article.

[Someone who knows](#) - September 16

7 and 7 plus accelerometer response is different ,so wonder if 7 still use Bosch acce like iphone 6.

[john smith](#) - September 16

It appears to be an invensense chip. You can see it on the Chinese version... <http://www.microsofttranslator.com/bv.as...>

[Geeky1](#) - September 20

Since the other link is now dead here is another! <https://translate.google.com/translate?h...>

[Geeky1](#) - September 21

-
- ☐ So what is reparability score ?

[Fahad Muneeb](#) - September 15

-
- ☐ Would like to see what's going on inside the 3.5mm adapter.

[Paul Weston](#) - September 15

+1! And there are chips in earphones, too. Crack it!~ DD

[Henryplusone](#) - September 16

-
- ☐ What is the model number of this phone ?

[Sathish S](#) - September 15

model number: A1785.

[skemhey](#) - September 15

- ☐ Apple A10 Fusion APL1W24 SoC - made by TSMC or Samsung?
Lets teardown A1784..

[skemhey](#) - September 15

100% made in TSMC. That is old news.

[Jie Zou](#) - September 16

- ☐ Wow, amazing. The battery is the same of 6 Plus.

[Marco Tini](#) - September 15

- ☐ I wonder, if I teardown and reassemble again will it be water resistant after re-assembly? as I can see there were some glue while opening the phone.

[dhanesh shastr](#)i - September 15

- ☐ Who supplied the gyroscope and accelometer? Traditionally it is near those front-end modules.

[Jie Zou](#) - September 16

- ☐ Any changes to the proximity sensor and front camera?

[tohff7](#) - September 16

- ☐ %#@! this is beautiful!

[Satyajeet Vishwakarma](#) - September 16

- ☐ Are you sure home bouton is transferable : supplier in china send me some photo and it s appear the home home flex is laser soldered on the metal frame

[sylvainA FR](#) - September 16

- ☐ Lets teardown A1784..

[skemhey](#) - September 16

- ☐ How does Apple get stereo from only one speaker? Or does the photo of the speaker in step 19 show a divider in the middle that "separates" two small speakers? If so, how does one call this "stereo" when the two speakers are so close together? And why do the diagrams on Apple's website show lines pointing to the two grilles on the bottom of the phone, with the legend describing them as "Stereo speakers", when the iFixit teardown shows that the left-hand grille doesn't actually have a speaker behind it, contrary to Apple's diagram? And why do some of Apple's own diagrams point to a supposed second speaker towards the top of the phone, though the iFixit teardown found no such speaker there?

[johnsawycrcjs](#) - September 16

The receiver speaker - that is, the speaker you hold up to your ear when you make a phone call, is the "second speaker" they're using for stereo sound now.

[Dan Parsons](#) - September 16

Thanks. It took me a while to figure that out.

So it seems that the second speaker is a beefier version of the ear speaker at the top of the phone, shown above the display in step 5. If so, since this speaker is front-facing, and the speaker at the bottom is downward/side-facing, this might not give a normal stereo image, but it has the advantage of delivering sound along two planes instead of one, so that whether you're facing the front of the phone or its lower end, you'll still have one speaker pointed towards you, which should deliver better clarity than having neither speaker pointed towards you. Of course, if you have the phone sitting on a table and you're facing one of the two sides or the top end of the phone, you won't have a speaker pointed towards you, but you'll still have the front-facing speaker emitting sound up and out, and sound reflecting upward off the table from the bottom-facing speaker, so there will still be good diffusion of sound, and some stereo separation.

[johnsawycjs](#) - September 16

- ☐ Looks like iPhone 7 Plus has Qualcomm Modem on both CDMA and non CDMA versions !!

[shreyassv123](#) - September 16

- ☐ But where is the screen teardown??

[edenadinar](#) - September 16

- ☐ It seems more modular than 6s and earlier. Are there more easily replaceable parts?

[John Gough](#) - September 16

- ☐ Unanswered question, what model, if any, uses Intel Modem.
Is there really a specific NFC-F (Felica) hardware or is it all software?

[K Sec](#) - September 16

The A17

<http://www.chipworks.com/about-chipworks...>

[Anas](#) - September 17

- ☐ Any thoughts about "BENDGATE" - as this phone is lighter than last year's model, will it be bendy, like the original 6-plus? Or pretty rigid, like the 6S-plus? What type of aluminium have they used this year?

[biowizard](#) - September 16

It's extremely rigid.

[max damage](#) - September 16

- ☐ Anybody know who makes the 'Proximity sensor and ambient light sensor' shown in step 21?

[PrettyFlyWiFi](#) - September 16

- ☐ What about the 3.5mm adapter? Does it contain a dac?

[George Papamichail](#) - September 16

- ☐ can you measure the different dimensions of the two camera sensors?

[simonesala](#) - September 16

- ☐ This Looks like much easier display-replacement - right?

[Naderio LP](#) - September 16

- ☐ Tear down the adapter please! Dac and amp info needed!

[johnarett](#) - September 16

- ☐ Repairability: Madness

[Ivan](#) - September 16

- ☐ So Felica is available for all iPhone models. I wonder if tourists can use Felica in Japan?

[Staubchen](#) - September 16

- ☐ iFixit! Where can we get hi-res images of these?

[mooo](#) - September 16

- ☐ iPhone 7
Audio ICs

The iPhone 7 still uses the same Apple/Cirrus Logic 338S00105 Audio Codec as in the iPhone 6S, but the Audio Amplifier has changed to the new 338S00220. (previously 338S1285).

We found not just 2 but 3 Audio Amplifiers - we speculate there is one audio amplifier for for each of the two speakers, and the third amplifier is for the headphone via the Lightning port.

The third Audio amplifier is situated next to the Applications Processor Module with 3 black blobs on it. It was discovered during de-soldering of the A10 applications processor. When the blob was scraped off, it was an 'oh wow, there are 3 audio amps!' kind of discovery. Chipworks has a Basic Functional Analysis Report of the Apple/Cirrus Logic 338S1285.

Note***** ifixit teardown report only lists 2 audio ampsChipworks discovered the third amp

<https://www.chipworks.com/about-chipwork...>

[marty](#) - September 16

- ☐ Could you measure the dimensions of the A10 Fusion chip? That would be very useful calculation die size! Also, high-res photo's of the A10 would be much appreciated :)

[Ewout](#) - September 16

- ☐ anyone knows something about light and proximity sensors?

[Gianluca Bertuzzo](#) - September 16

- ☐ which ram is right for 7plus ?2gb?3gb?

[wei wang](#) - September 16

- ☐ Wow you guys are like display mate for tearing down phones.

[rafaelbreban](#) - September 16

- ☐ "Hopefully Apple didn't remove anything important." haha

[Dylan](#) - September 16

- ☐ Will you guys tear down the 3.5mm adapter?

[rafaelgil2006](#) - September 16

- ☐ Does anybody know if the 7 plus is using sapphire glass? Or is it (like it was shown in a video earlier on the regular 7) only using Gorilla Glass.

[han](#) - September 16

- ☐ You missed a third audio amplifier. Directly above the "A" in "A10" on the processor, there is a chip with 3 black blobs on it. It's the amplifier for the lightning port to headphone adapter.

[spaceywilly](#) - September 16

Yes, that third amp is a significant discovery implying a major change to Apple's MFi specs. In which case its a huge reversal of position, and will lead to a flood of cheap analogue audio products previously not possible, not to mention significant confusion as to just exactly what a "Lightning" equipped product means. My adapter didn't work on my SE until I updated to iOS 10. That shouldn't have been necessary as Apple already has published Lightning audio specs -- unless they changed something significant. So suddenly its not an inexpensive digital adapter with a DAC and amp, its a very expensive port connector changer.

[Mac 128](#) - September 17

-
- ☐ Great job! Very interesting and informative! Like your lite hearted easy to read writing!

[orion2000](#) - September 16

-
- ☐ Nice teardown.... Looks like we have most of the tools available @RadioShack. Ah tri-wings... just like the McDonalds toys.

[Radio Shack SLO](#) - September 16

-
- ☐ Can somebody help crack my iPhone 6S encryption?? I forgot my passcode and only 2 more attempts before lock out.

[hdtv720p](#) - September 16

-
- ☐ what is the difference on the 1784 model?
I see everyone asking for a teardown. Is it better than the rest of them?

[george allo](#) - September 16

-
- ☐ Any idea what the part is between the RF front-end (between the Skyworks part and Avago PAMs)?

[Harold](#) - September 16

-
- ☐ The stereo speakers function in such a way, that if you do watch a video on your phone or if you tilt your phone sideways, there will be a left and right speaker, both working to create a stereo sound. Most people do use their iPhone sideways to view videos, so this will certainly be noticeable to them.

[Jose Toscano](#) - September 16

I'd love to see a review of this. I can't imagine how they are going to make two different speakers sound the same, much less where one faces the listener, and the other points of to the side.

[Mac 128](#) - September 17

-
- ☐ What about reassembly? It looks like a lot of the waterproofing is either a) lost, or b) significantly disturbed from the teardown. With reassembly, do we have to completely remove the waterproofing and reapply? If not, does it go back together imperfectly, due to gobs of the waterproofing building up during disassembly?
I wonder if you couldn't spray the entire internals with waterproofing, after the fact? It would make future mods/repairs basically impossible, but would improve/restore the initial waterproofing.
To all the rocket surgeons and techies out there, what're your thoughts?

[bsquirdoff](#) - September 16

-
- ☐ Can anyone explain why Apple keeps changing their screw heads? I'm genuinely curious to know how this is better than torx or pentalobe.

[Ivy Wlrs](#) - September 16

-
- ☐ The homebutton is almost the same venkat from harithatech.com

[venkatramt](#) - September 16

-
- ☐ I was wondering if phones get taken apart for repairability grading, do any of these phones get put back together? :)

[Peter Shen](#) - September 17

-
- ☐ How about the flash lights? They claimed to be 4 LEDs.

[WPG](#) - September 17

- ☐ why 4 different types of drivers? star for the bottom two screws, tri point for the new type and the obvious normal screw?

[Krayzee](#) - September 17

- ☐ Hello there ,
I have a question , what size are the tri-points screws (Y000, 1 or 2)??
because i have the classic Pro tech toolkit and i just want to make sure if i have the right tools or not!
Thank you guys

[Ibrahim](#) - September 17

- ☐ Did you specify the IMU package?
Is this the new IPS LCD panel from JDI? I have read it uses the second generation Low Temperature Polysilicon backplanes, which in another article fueled a rumor that a higher resolution panel was going to be used due to the power savings.
Is the lightning port data throughput the same as the previous iPhone 6s Plus, or the updated standard used in the iPad Pro?
Have you confirmed that there is analog audio available now from the lightning port?

[Michael Balzer](#) - September 17

- ☐ How about the flash lights? They claimed to be 4 LEDs. <http://txlcd.com>

[txlcdsupplier](#) - September 18

- ☐ I have a question. Did Apple use any technology from printed electronics, like silver ink, in the latest iPhone?

[lol](#) - September 18

- ☐ If history is any guide as ALL Apple products have InvenSense gyros then we will see an integrated single 6 Axis from InvenSense. The Apple Watch must use a single 6 axis for everything to reduce power.
The only question is did Apple use InveSense GPS navigation Software?
Apple obviously has reduced GPS run time and rides the 6 Axis to reduce power consumption by up to 80% off time. This is what InveSense software specializes in and it has to be in the iWatch.
Will Apple do their own dead reconning algorithms or use InveSense SW?

[KrisCo](#) - September 19

I found a write up on a Chinese site that shows the Invensense Chip. <http://www.microsofttranslator.com/bv.as...>

Also here is a pic of its location: <http://img.mp.itc.cn/upload/20160919/734...>

[Geeky1](#) - September 20

- ☐ Can anyone confirm if the camera lens cover and Home button are still sapphire? A few people have said, well, that they aren't.

[Chris Brighton](#) - September 19

- ☐ Can a 6+ or 7+ battery suitable on a 6s+

[shrini23](#) - September 20

- ☐ Porque vocês não me dar um iphone, ao invés de quebrar-lo

[fabinhod500](#) - September 20

- ☐ Porquê vocês não me dar um iphone ao invés de quebrar-lo

[fabinhod500](#) - September 20

- ☐ I never understand why it takes so long for folks to figure out the accelerometers / gyros... It's nice to see that others have already identified the InvenSense 773C but I wish iFixit had figured it out first. Is this a living document? Will additional chips and information be added as the rest of the world figures it out? Regardless, great teardown guys! Thank you for doing this year after year!

[Bob Powers](#) - September 22

- ☐ It would be interesting to know who makes the microphone(s). That's a small but important piece that few ever take much notice of.

[Bob Powers](#) - September 22

- ☐ Is the camera sensor same as on 6s plus? I'm asking about the pixel and resolution. Not just the 12 megapixel total resolution. I know there is a new image processor. That's not the question. I want to know if this new sensor resolves for a better image quality than the iPhone 6 s plus. Practically speaking, is it (the 7 plus camera image sensor) a better film? Better pixels? Knowing the optics are improved for better optical resolution.

[gwwakim](#) - September 25

- ☐ Compared a 7+ Jet Black to and 7+ Black and find the lightning connector is not flush on the Jet Black. Has a sharp edge protruding past the phones surface. Is this normal?

[Bubs](#) - September 28

- ☐ If your lightning port is not flush it is not IP67?

[Bubs](#) - October 1

- ☐ is this phone still susceptible to touch IC disease?

[Jeremy](#) - October 9

- ☐ Does anyone know if there is any place that sells the parts of the iPhone 7 plus? I am a new repairer so I want to know where I can find these parts and also the screws and screwdrivers that were used to assemble this. I tried searching this online but most online shops have only iPhone 6s plus parts at the most.
Thanks!!!

[Gypsum Chen](#) - October 21

- ☐ You are so well on your own way

[AbdelHadi](#) - October 21

- ☐ iPhone 7 and now Google Pixel...which smartphone is best for us?
Just purchased the iphone 7 recently from wantITbuyIT and now im waiting for google pixel. The battery life is good unless you are doing something that involves a lot of processing power.

[Jenny Jonson](#) - November 7

- ☐ More importantly did apple FIX the problem that causes Touch Disease in the iphone 6Plus and 6sPlus? you guys never took close photos of the chips to show if they had the epoxy potting that they should have.

[timgray1](#) - November 17

Add Comment

1024

Post comment

<input type="checkbox"/> View Statistics:	Past 24 Hours: 505	Past 7 Days: 3,189	Past 30 Days: 16,519	All Time: 544,518
---	--------------------	--------------------	----------------------	-------------------

24,693

FREE MANUALS

92,412

SOLUTIONS

7,058

DEVICES

iFixit

- About Us
- Customer Support
- Careers
- Feedback
- Press

Fix the Planet

- Repair Manifesto
- Teardowns
- Stories
- Phone Repairability
- Tablet Repairability

Resources

- Wholesale
- API
- oManual
- iFixit Pro
- Get the App

Stay in the loop

Learn something new every month:

you@email.com



Share your knowledge

2016 iFixit – Licensed under Creative Commons